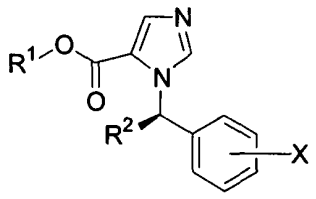
Claims

1. (Original) A compound of the formula (I)

(I)



wherein

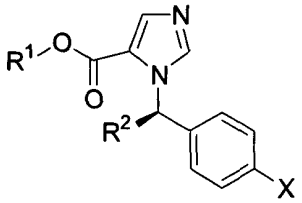
R^1 is linear or branched C_1-C_4 alkyl, and is optionally substituted with a halogen selected from the groups consisting of F, Cl, I or Br;

R^2 denotes an alkyl group containing 1 or 2 carbon atoms; and

X is a non-radioactive or a radioactive halogen.

2. (Original) The compound of claim 1, having the formula (IA)

(IA)



wherein

X denotes a non-radioactive or radioactive halogen selected from the group consisting of I, Br, and F.

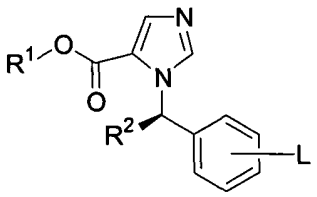
3. (Original) The compound of claim 2, wherein

X is a radioactive halogen selected from the group consisting of ^{123}I, ^{124}I, ^{131}I, ^{76}Br, ^{82}Br or ^{18}F.

4. (Original) The compound of claim 1, wherein R^1 and R^2 are each methyl, and X is ^{123}I, and wherein the compound is ^{123}I-metomidate (^{123}I-MTO).

5. (Original) The compound of claim 1, wherein R^1 is ethyl, R^2 is methyl and X is ^{131}I, wherein the compound is ^{131}I-etomidate (^{131}I-ETO).

6. (Original) A compound of the formula (II)



(II)

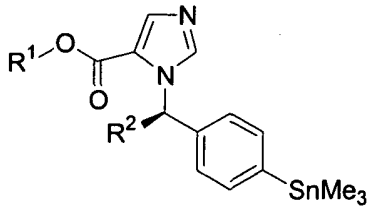
wherein

R^1 is linear or branched C_1-C_4 alkyl, optionally substituted with a halogen selected from the group consisting of F, Cl, I or Br;

R^2 denotes an alkyl group containing 1 or 2 carbon atoms; and

L represents an alkyl-stannyl group selected from the group consisting of trimethylstannyl, triethylstannyl, tri-n-propylstannyl and tri-n-butylstannyl.

7. (Original) The compound of claim 6, wherein L is a trimethylstannyl. group

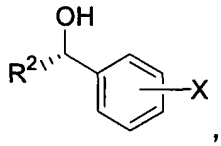


(IIA)

8.. (Original) The compound of claim 6 wherein R^1 and R^2 are each methyl, and L is a trimethylstannyl group.

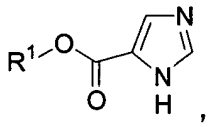
9. (Original) A process for preparing the compound of claim 1, the method involving the steps of:

(a) providing a (S)-secondary alcohol of formula (III)



(III)

(b) coupling said (S)-secondary alcohol of formula (III) to an alkyl imidazole-4-carboxylate of formula (IV)



(IV)

under conditions effective to achieve the compound of claim 1.

10. (Original) The process of claim 9, wherein the (S)-secondary alcohol of formula (III) is prepared by the method further comprising the steps of:

(a) reducing a substituted phenyl methyl ketone having X as either iodine or bromine, to the corresponding racemic alcohol;

(b) preparing the chloroacetate of said racemic alcohol; and

(c) performing a lipase SAM II-catalysed resolution of (S)-III derived from the (S)-enantiomeric ester.

11. (Original) A process for preparing the compound of claim 2 the method comprising:

(a) providing a compound of formula (II)

(b) reacting said compound of formula (II) under conditions effective for replacing L with a non-radioactive or radioactive halogen to produce a compound of the formula (I).

12.(Origninal) The method of claim 11, wherein the radioactive halogen is ^{123}I or ^{131}I.

13. .(Origninal) The method of claim 11, wherein the radioactive halogen is ^{76}Br or ^{82}Br.

14. (Original) The compound of claim 2, wherein the halogen is non-radioactive or radioactive iodine.

15. (Original) A method for using the compound of claim 2 to prepare a subject's adrenal glands positron-emission imaging, the method comprising the steps of:

(a) providing the compound of formula (IIA), and contacting said compound with a radioactive halogen and a halogenating agent under conditions suitable to affect the substitution of the trimethylstannyl group on the compound of formula (IIA), with a radioactive halogen, and

(b) administering to a subject, a sufficient quantity of the compound of claim 2 so as to render the adrenal glands suitable for positron-emission imaging;

wherein the compound of claim 2 is either prepared immediately prior to administering to the subject, or prepared at least one day before the imaging is performed, and stored until needed.

16. (Original) The method of claim 15, wherein the radioactive halogen is selected from the group consisting of, ^{123}I, ^{124}I, ^{131}I, ^{76}Br, ^{82}Br and ^{18}F.

17. (Original) The method of claim 15,wherein the positron emission imaging is effective in detecting adrenal-derived tumors

18. (Original) The method of claim 17, wherein the adrenal derived tumor is not anatomically confined tothe adrenal glands.